DOCUMENT RESUME

ED 334 062 SE 052 113

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TITLE	Discrete Mathematics across the Curriculum, K-12. 1991 Yearbook.
INSTITUTION	National Council of Teachers of Mathematics, Inc., Reston, Va.
REPORT NO	ISBN-0-87353-305-4
PUB DATE	91
NOTE	248p.
AVAILABLE FROM	National Council of Teachers of Mathematics, Inc., 1906 Association Drive, Reston, VA 22091 ($18.00; members, bookstores, and orders of 10 or more--20% discount).
PUB TYPE	Books (010) -- Collected Works - General (020)
EDRS PRICE	Document Not Available from EDRS.
DESCRIPTORS	*Algorithms; *Computer Uses in Education; Elementary Secondary Education; Graphs; Higher Education; Mathematical Models; *Mathematics Curriculum; Mathematics Education; *Mathematics Instruction; Matrices; *Problem Solving
IDENTIFIERS	*Discrete Mathematics; NCTM Curriculum and Evaluation Standards

ABSTRACT

This yearbook provides the mathematics education community with specific perceptions about discrete mathematics concerning its importance, its composition at various grade levels, and ideas about how to teach it. Many practical suggestions with respect to the implementation of a discrete mathematics school program are included. A unifying thread throughout the book is that discrete mathematics incorporates many of the recommendations found in the Curriculum and Evaluation Standards for School Mathematics of the National Council of Teachers of Mathematics. Contents include: (1) Perspectives and Issues (rise to prominence, implications, and cautions); (2) Teaching in Grades K-8 (strengthening traditional curricula through problem-solving approach); (3) Teaching in Grades 7-12 (appropriateness for both precollege students and noncollege-intending students); (4) Graph Theory (formulation of real-world applications of algorithmic thinking); (5) Matrices (computer-based storage and manipulation of numerical data); (6) Counting Methods (enhancement of combinatorial reasoning with manipulatives dominoes , geometric concepts, and generating functions); (7) Recursion, Iteration, and Induction (spreadsheet programs and computer graphics as tools to explore concepts and applications); (8) Algorithms (thinking procedurally without the rigor of computer programming); and (9) Units, Activities, and Projects (open-ended, relevant problems lead to debate and discussions among students). (JJK)

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